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Is it possible to define gender effects of the human capital on the processes of well-being?

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Abstract

We analyze the influence of education and training processes on the levels of a country's development by examining the gender difference in order to focus attention on those realities where females' education is more thwarted. It is assumed as necessary at the same time a single contribution and a combined one of both male and female human capital in order to trigger virtuous processes of growth and economic development. In this work we propose a cross-country analysis which aims to build a synthetic indicator of the level of human capital for men and women through a series of variables related to schooling, education and participation in training, to observe the relationship with indicators which configure the development and to describe findings related to groups of nations with different socio-economic characteristics. To this purpose, by using a cluster analysis of the countries under investigation, we highlight these differences and discriminate against the synthetic indicator of human capital based on gender.

Keywords: human human capital, education by gender, literacy, well-being, discriminant analysis. *JEL classification*: C31, C38, H52, J16, 015.

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1. Introduction and theoretical background

We are to be interested in existing gender inequalities in important well-being related dimensions such as education, health, employment, or pay because of many reasons. In fact, gender inequalities lower well-being and are a form of injustice in most conceptions of equity or justice so that they are problematic both from a well-being and an equity point of view (see among others Klasen and Wink, 2003; Klasen, 2002, 2007). Even if such a view would promote a reduction of gender inequalities in these dimensions of well-being on intrinsic grounds, recent studies have been carried out in order to examine the instrumental effects of gender inequality on other important development outcomes such as above all economic growth. Although this paper is aimed to develop these new studies, it do not want to contradict the centrality of reducing gender inequality on intrinsic grounds. The examination of the impact of gender inequality in education on economic growth is the main concern of these studies. For example, Oded Galor and David Weil (1996) and Nils-Petter Lagerlöf (2003) as well as other important

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contributions show that the relationship between gender inequality and economic growth is not positive. Thanks to this literature it is possible to observe that economic development may be encouraged by a lower gender gap, largely because of the impact of female education on fertility and the creation of human capital of the next generation. The main outcomes of these studies will be briefly exposed in the next section and, at the same time, an empirical literature has also investigated these effects. The fact that economic growth might be actually encouraged by gender inequality in education had been illustrated by some earlier studies (Barro and Lee, 1994; Barro and Sala-I-Martin, 1995), whereas more recent literature has given evidence that the opposite can be the case (Hill and King, 1995; Dollar and Gatti, 1999; Forbes, 2000; Knowles, Lorgelly and Owen, 2002; Klasen, 2002; Yamarik and Ghosh, 2003; Abu-Ghaida and Klasen, 2004). About the impact of gender inequality on economic growth, this recent literature compared to the previous one is able to show both why earlier studies had found the opposite effect and why more careful econometric techniques came up with the new result that gender inequality in education reduces economic growth. Abu-Ghaida and Klasen 2004, Klasen 2006, Stotsky 2006 and Blackden *et al.* 2007 are some of the theoretical and empirical studies which show how gender inequality in education and employment reduce economic growth. The main arguments from the literature, which are discussed in detail in Klasen (1999, 2002, 2006) are briefly summarized below. About gender inequality in education, the theoretical literature shows as a first argument that the average amount of human capital in a society is reduced by gender inequality as well as economic performance is negatively affected by it. Gender inequality has these negative consequences because it restrained the talents from which to draw for education so that it leaves out highly qualified girls (and taking less qualified boys instead, e.g. Dollar and Gatti, 1999). Furthermore, if there are declining marginal returns to education, restricting the education of girls to lower levels while taking the education of boys to higher levels means that the marginal return to educating girls is higher than that of boys and thus would boost overall economic performance (World Bank, 2001; Knowles *et al*., 2002). A second argument concerns the externalities of female education. It is known that the promotion of female education reduces both fertility and mortality levels as well as improves the education of the next generation. Each factor in turn has a positive impact on economic growth so that the positive outcomes to society of high female education are restrained by gender gaps in education (e.g. Galor and Weil, 1996; Lagerlöf, 1999; World Bank, 2001; King, Klasen and Porter, 2008). This situation is also affected by a timing issue. A positive demographic constellation which Bloom and Williamson (1998) refer to as a 'demographic gift' will be caused by the reduction of fertility levels over a period of about twenty years. In fact, for a period of several decades, the working age population will grow much faster than overall population, thus lowering dependency rates with positive consequences for per capita economic growth. A third argument is about international competitiveness. South Asia and individual countries belonging to the developing world are adopting the same strategy which had made many East Asian countries competitive on world markets (e.g. Seguino, 2000a, b). This strategy involves the use of female intensive export-oriented manufacturing industries so that women need to be educated as well as there must no barrier to their employment in such sectors. As a consequence, the ability of countries to capitalize on these opportunities would be reduced by gender inequality in education and employment (World Bank, 2001; Busse and Spielmann, 2006). There are a number of closely related arguments concerning gender gaps in employment. Firstly, there is a similar argument that it imposes a distortion on the economy as do gender gaps in education. It artificially reduces the pool of talent from which employers can draw upon and, as a result, the average ability of the workforce is reduced (e.g. Esteve-Volart, 2004). Such distortions would not only affect dependent employed, but similar arguments could be made for self-employed in agricultural and non-agricultural sectors where unequal access to critical inputs, technologies, and resources would reduce the average productivity of these ventures thereby reducing economic growth (see Blackden *et al*., 2007). These considerations might have some empirical relevance in accounting for the results since self-employment (including in agriculture) is included in our empirical assessment. Secondly, a related argument suggests that economic growth can be obstructed by gender inequality because of demographic effects. In fact, Cavalcanti and Tavares (2007) developed a model which shows how there would be a relationship between gender inequality in employment and higher fertility levels which in turn reduce economic growth. Thirdly, it is important to consider the results of the studies carried out by Seguino (2000a, 2000b) on the impact of gender gaps in pay on international competitiveness. In fact, the result obtained by Seguino imply that gender gaps in employment access would also reduce economic growth since it would not allow countries to use (relatively cheap) female labour as a competitive advantage in an export-oriented growth strategy. Fourthly, it is important to underline the importance of female employment and earnings for their bargaining power within families. The fact that female employment and earnings increase their bargaining power in the home is demonstrated by a wide literature (see for example Sen, 1990; Duncan, 1997; Haddad, Hoddinott, and Alderman, 1997; World Bank, 2001; Klasen and Wink, 2003; King, Klasen, and Porter, 2008). The growth of women's bargaining power

not only causes an improvement of female conditions but also generates a range of growth-enhancing effects which, in general, promote human capital of the next generation and therefore economic growth (*e.g.* Thomas, 1997; World Bank, 2001), and, in particular, include higher savings as women and men differ in their savings behaviour (*e.g.* Seguino and Sagrario Floro, 2003), more productive investments and use and repayment of credit (see Stosky, 2006), and higher investments in the health and education of their children. The corollary is that countries that invest more in education and health should have, *coeteris paribus*, higher levels of long-term economic growth and lower levels of poverty and gender differences. Investment in human capital works directly on the levels of schooling and health of the population: higher public spending on health and education determines, with the same other condition, a substantial improvement in the participation in the school system by children and greater access medical care. This has important and lasting effects on economic variables: higher levels of human capital enhance economic growth through improved use of production inputs and by stimulating productive investments. Investments in education are both contemporary and lagged effects: about two-thirds of these investments produce effects in the first five years and a third part in the five years following. The effect on poverty is significant: an increase in social spending equal to about one percent of gross domestic product reduces the incidence of poverty by about twenty percent over a decade. However other factors are important as investment in human capital are directed to an raise in income and poverty reduction. Among these factors are the degree of functioning of the public appearances, a low level of economic and social inequalities - for example where gender differences are lower, the investment in human capital is more effective - the quality of institutions and the level of income. In general these countries with the lowest levels of human capital and public spending on health and education can benefit more from a marginal increase of these investments to reduce poverty (Baldacci *et al.*, 2004). Furthermore, empowering women has helped some countries in increasing and sustaining economic development processes. When given more rights and opportunities women begin to receive more education, thus increasing the overall human capital of the country; when given more influence women seem to act more responsibly in helping people in the family or village; and when better educated and more in control of their lives, women are more successful in bringing down rapid population growth because they have more say in family planning (World Bank, 2001). Several activities carried out by women have attracted a considerable amount of interest among scholars and policy-makers who have recognized the meaningful potential of female ability for contributing in economic growth processes, increasing development dynamics and job creation. A previous research has shown that women-owned business ventures have a lower propensity than men-owned ventures to grow and be successful (Welter *et al*. 2003, 2006). A prominent explanation for such gender differences is that compared to male entrepreneurs female entrepreneurs lack critical human and financial resources to start and run a business successfully (see among others, Lerner, Brush, and Hisrich, 1997). Within the scope of this study we focus on gender differences in human capital levels and their impact on the economic performance and on the process of well-being. Thereby, we adopt a human capital definition provided by Becker (1964) and we consider it as the skills and knowledge a male/female acquires during his/her life, e.g., through schooling, work experience, and training. The phenomenon of gender inequality even today remains one the most significant socio-economic as well as cultural problem, especially for the opportunities and capabilities, in particular those activities concerning education and training. The reason is to be found in a number of factors rooted in many contexts, belonging to the richest world and to the developing countries. Moreover the need to have a population characterized by a high level of human capital is the main condition to achieve sustainable economic growth over time and, therefore, paths of development. It thus refers to those fundamental assumptions that require both a system of public policies, focused and aware on the wide dissemination of scientific research and modern technology, and a willingness, public and private, to invest and take advantage of the levers of knowledge and "immaterial" capital. To this purpose it is essential the contribution of both genders, male and female, and the great importance of achieving greater equality between the two groups, and the fundamental role of the educational processes in various ways to improve the living conditions of mankind, especially in developing countries, are described *inter alia* in the Millennium Development Goals edited by the United Nations. Relating to those goals is stated: « *[…] Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015*» (UN, 2010). In particular, the role of women, often underestimated by many societies, is observed as a better chance to get out of poverty, interpreted the latter along with cultural factors by several studies as the foremost cause of the critical issues which give rise to inequality between genders. Even in the proposals result of the so-called Lisbon Strategy (2000), and more recently Europe 2020 (2010), which includes a set of goals shared by the EU member countries, there are the perspective to improve working conditions for both sexes, and more generally to reduce the gender differences that are still present in Europe, one of the most developed areas of the world. In the economic literature the inequality between males and females is often seen as a subject of study based mainly on the differences that the

two genres have in many social and economic backgrounds. This research, however, is based on the analysis of the contribution that the two gender categories would give to the process of economic growth through their abilities and skills, their productivity at work and their involvement to the overall development and innovation dynamics. Before detecting the differences between the two groups, it is important to imagine how a jointly and harmoniously combination of all the referred elements build the national human capital. In addition, the goal of the search cannot be limited to traditional educational process, but it has also to include new processes dedicated to continuing education, such as training and learning for work and lifelong learning schemes. In this domain is not enough to find out the presence of women in various professional activities, but it has also required to estimate the actual contribution, and compare them with those of the complementary male population. There are, of course, conditions that in any case affect the choice for occupation, just by nature and deeply rooted culture, hence there is a sort of idea of "segregation" of employment sectors, which differs from the more negative concept of "discrimination". The innate differences lead to consistently follow different careers for males and females, and are in fact more "binding" of reasons, sometimes stereotypes, like: parents, popular culture, school, religion and media. These play an important role in the conditions imposed by family policies, such as the presence of incentives on employment contracts, laws which can regulate such as gender quotas and the opportunity for fathers to contribute to children activities. Ultimately, although the gender gap for example in labour market and entrepreneurship has narrowed during the past decades, the share of female engaged in venture creating activities is still comparatively low in many countries (Delmar and Davidsson, 2000; Reynolds, Carter, Gartner and Greene, 2004; Arenius and Minniti, 2005; Bosma and Harding, 2007; Parker, 2009). Many scholars have studied gender differences in entrepreneurship with respect to venture creation, growth aspirations (Cliff, 1998), innovation (Strohmeyer and Tonoyan, 2005), and new venture performance in terms of survival (Kalleberg and Leicht, 1991), growth (e.g., Alsos, Isakson, and Ljunggren, 2006; Coleman, 2007; Kalleberg and Leicht, 1991) and profitability (Coleman, 2007; Watson, 2002). A well-known explanation for gender diversities in entrepreneurial performance is that women have fewer resources as compared to male, therefore, lack important prerequisites to achieve success (e.g., Lerner, Brush and Hisrich, 1997). This resource gap may be a result of different role expectations and associated career paths that influence human as well as financial capital. However, such differences in the professional careers of men and women due to role expectations may largely depend on the cultural perspectives and, subsequently, on the participation of men and women in the work force in general. As a consequence, gender differences in human capital and entrepreneurial success may not exist universally, but depend on the cultural context. In addition, social role expectations may have a crucial impact as to how men- and women-led businesses benefit from their founders' human capital (Rosenbusch *et al*., 2009). Within the scope of this study we focus on gender differences. Thereby, we adopt a human capital definition provided by Becker (1964) which consider human capital as the skills and knowledge an individual acquires during his life, e.g., through schooling, work experience, and training. In his work, Becker (1964) argued that investments in human capital influence the structure and the distribution of personal income and in order to define gender effects of the human capital on the processes of well-being we detect how education and training processes have an effect on the levels of a country's development. In this work we also study the possible differences in the two macro categories contributions on the mentioned processes of economic growth, to provide credible advice to policy makers in terms of support of education and training among the population. The aim is not, however, to observe and explain the status of women in contexts of advanced training and work, but it is important to consider the level of human capital that is influenced by experience, education attained, influenced by living conditions and the particular socio-economic framework. With available data to perform a cross-country analysis it is also possible to find differences between Western countries and developing ones, to search for common paths and similarities. In this regard, some studies confirm the closeness of the capacity and production levels of the two genres, always seeing people as workers, similar to inputs, while different from each other (Campion and Shrum, 2004). Difficulties that young people found in the poorest countries in access to education are extremely widespread and pose barriers to formal and substantive progress of various national economies. Of course, in these contexts there are real problems as regards the levels of dignity of living conditions, including health conditions, which are essential to be able to take advantage from the potential human capital (see among others the study of Jones and Chant, 2009). Poverty, for example, acts in a way, even indirectly, by increasing inequality between genders, just consider the case of families where the woman has to work, but having acquired family responsibilities, can accept only certain types of contracts, usually the less well-paid. It is not possible to spread a single model of greater equality in very different contexts. In fact, if in western countries we assist to a rapprochement process, due most to social and economic development, in the poorest ones the same thing could not be willed or sought, and this because there are cultural rules which settle in these communities (see among others Sharp *et al*., 2003). Among the

international organizations which are interested in more difficult socio-economic contexts is necessary to mention the United Nations Population Fund[1], which also seeks to identify the most effective tools for reducing the existing disparities, focusing on issues such as violence against women, economic discrimination, and difficulties with the tradition and the reproductive role of women. Regions of the world where the differences are mostly felt, for example with regard to school enrollment rates, are those of Middle and Western Africa, Western and South Central Asia, and South America (UNFPA, 2009).
In recent years there has been both in rich and in developing countries a greater spread of the female gender in work activities that most interest our analysis, such as those related to scientific research (Campion and Shrum, 2004), due to the reduction of disparities in school attendance already in the early years, although they remain problematic in regions such as North Africa (U.N., 2010). These contexts are characterized by the presence of constraints of society and traditions in the use of a highly trained female human capital, to consider this condition a further limit to their plausible economic development process. The cited work by Campion and Shrum focuses on some underdeveloped contexts in Africa and India, noting that there is not a strong dissimilarity between groups of male and female researchers, although having the latter group still limitations in the working activities, mainly due to cultural heritage in which there are obligations imposed by society.

2. Forecast analysis of synthetic indicators for education and employment by gender

In order to observe the progress of the access to education process and active participation to work activities, we first separate the countries into two macro groups with similar characteristics in terms of socio-economic issues, and then, using the forecast analysis we analyze the possible developments. We refer to the World Bank's Country Classification by Income[2] (2010), obtaining four homogeneous groups of economies, together with similar levels of income per capita. Subsequently, we use data from the World Bank (2010) to synthesize the time series of current levels of education and labour participation both for males and females in the four selected contexts. Our interest is to develop forecasts by gender and by country groups with the purpose of defining what could be the contribution of the two genders on the economic development, especially in poorer countries. Furthermore, looking at the data concerning the recent past, we seek possible ideals ways laid out by the more advanced economies, that could be reproduced even in the most backward contexts. The two indicators chosen to synthesize the variable related to access to education are "*literacy rate*" (15-24 years) and the "*progression to secondary school*", while those used for the variable of employment are "*labor participation rate*" and the "*employees - services*" (World Bank data). The four mentioned groups of countries, divided by income in the World Bank classification, we extrapolate that to us are the two representative: what is called "*higher-income economies*", on behalf of the richest and most advanced economies, and "*lower-middle-income economies*", that are developing economies poorest than the first group. In the figures below we show first the situation for males, and then for female, both for rich and poor countries (respectively "*higher*" and "*lower*" in the in the figure legend).

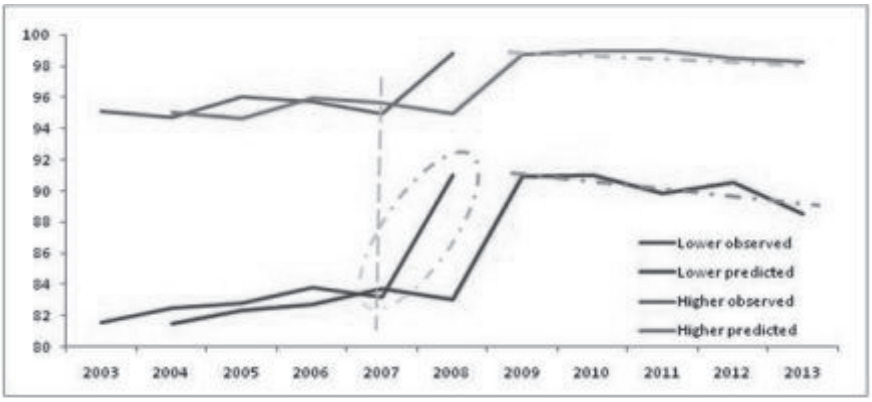

Fig. 1 - Observations and forecasts for male education in lower and higher income economies

[1] Retrieved from: http://www.unfpa.org/gender (October, 19th 2010).
[2] Retrieved from: http://data.worldbank.org/about/country-classifications/country-and-lending-groups (July, 12th 2010)

Figure 1 shows that differences between the countries are significant in terms of access to education for male gender, and certainly they affect the different socio-economic paths. It can be notice the recovery by the less developed countries, which according to our estimates may reach levels of development of human capital much closer to the rich countries than in the past. The trend over the time is fairly constant until 2007. In 2008 there is an increasing not expected in lower and higher income economies. In fact, the theoretical auto regressive trend to 2009 repeats the actual development and subsequent values from 2010 to 2013 show a decreasing trend over the time considered. Indeed, the influence of 2008 for forecast is not sufficient to compensate the lower previous percentages for both types of economies, and consequently it tends to estimate in a lower way the percentage because it attempts to recover the percentage of the past. The figure below highlights observations and forecasts for female education in lower and higher income economies.

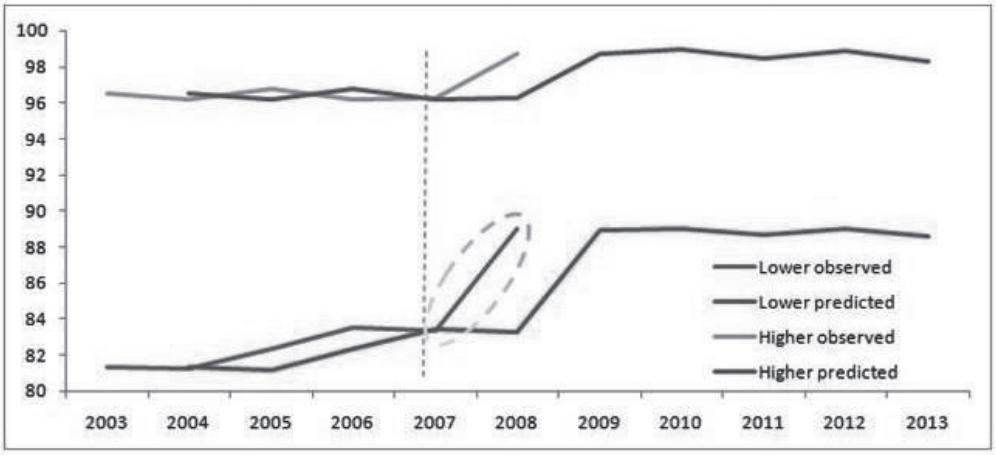

Fig. 2 - Observations and forecasts for female education in lower and higher income economies.

Figure 2 reveals an autoregressive trend of first-order as shown above for male gender. The trend is constant until 2007, in 2008 we note an increase not expected in both lower and higher income economies, but contrasting with the access to education for males this raise is not so strong. For our second synthetic indicator, on the topic of contribution to the economic system through employment, we analyze the case by gender in the two following figures.

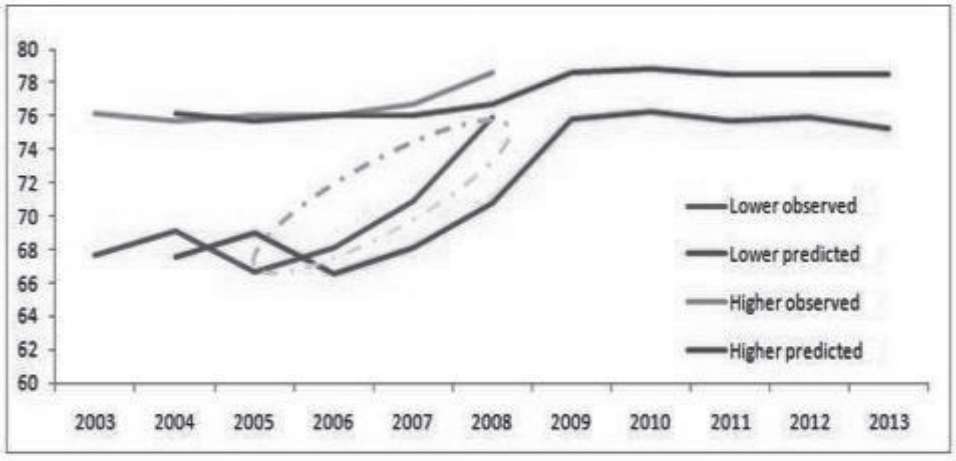

Fig. 3 - Observation and forecasts for male employment in lower and higher income economies.

In Figure 3 we observe an interesting values for the lower income economies. Over the time we note a growing trend in employment participation by males. In 2008, the percentage is almost at 76%. The percentage of the higher countries is constant over the time, always stable and upper than lower countries. Moreover, even for higher

countries in 2008 there is a slight increasing in our indicator which reaches nearly 80%. Forecasts values, repeat with a time shift of one year, the observed data calculated with a autoregression of first-order. In both cases the data have provided a kind of performance that decrease. The following figure shows the current situation for females.

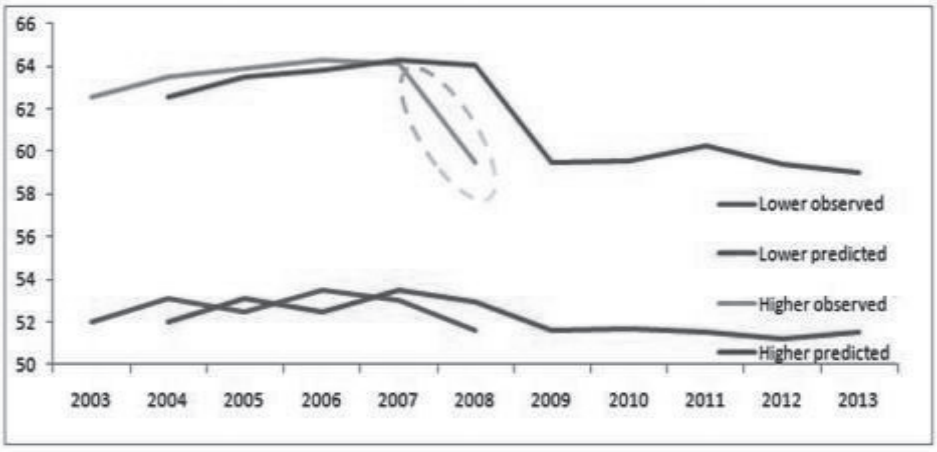

Fig. 4 - Observations and forecasts for female employment in lower and higher income economies.

In this case, the situation for female gender is quite different than of males. The percentages for both types of economies are lower values than observed values in male gender. The trend is also growing in higher income countries until 2007. In less advanced economies we note a fluctuating trend with a slight decrease starting from 2008. The estimates parameters calculated with a autoregression model reflects the phenomenon found in both economies, a decreasing trend over the time. In conclusion, we can state that there is a greater proximity between the two types of countries with regard to the employment, whereas the gender gap is even wider in accessing to the processes of education.

3. Concluding remarks and policy implications

Even before the typical economic variables, we have to consider that the findings from a large literature bring to mind that gender inequality in education and employment also have a significant negative impact on other development goals such as reductions in fertility, child mortality, and undernutrition. Thus reducing current gender inequality in education and employment will not only support economic growth, but also further these other valuable development goals. There are three types of implications that arise from this contribution to the implementation of supporting policies, especially for developing countries. First, the effectiveness of development aid depends on the quality and quantity of resources that can be driven from debt service to measures for combating poverty. Second, the role of health systems and public education is central to human capital formation that is a necessary condition for boosting productivity and economic growth. Finally, the macroeconomic reforms should aim to create fiscal space so that investment in human capital can be sustainable over time and can deal effectively with gender differences. In fact, one of the main challenges currently facing all socio-economic systems is the need to increase economic growth and to improve development processes. As suggested here, a significant constraint to higher economic growth appears to be the substantial gender inequality persisting in education and employment: a considerable extent of this challenge is linked to the role played by women in the society and the costs of discrimination toward women in education and employment not only harm the women concerned, but impose a cost for the entire society. Our contribution has analyzed empirically some profiles in which male and female can give, through the enhancement of human capital, on the level of production and productivity, and on the general socio-economic context of a nation. Skills and abilities held by individuals are an important foundation for more advanced economies but may be ideal paths for those countries which are in less developed situations. Thus we compared two groups of countries, according to a classification of the World Bank, representatives of rich countries and those developing. Throughout data and surveys by UN (the most recent ones, for example see UNFPA, 2009 and UN,

2010) we find that in many poor countries, for many reasons as traditions, economic hardship, religion and cultural contexts, women still encounter problems related to education and employment. But societies with a high-quality education can contribute through female education and employment to the long-term economic growth of entire countries. Therefore, renounce or limit the contribution of a precious part of the population (the female insights) may prove a serious constraint to development. Our observations and predictions highlight that in the poorest countries there is an increase in access to education of both genders. Females living in higher income economies experience a more advanced means and capabilities in order to access to education processes, although this effect is not reflected positively on the whole complex of labour market explaining the work participation related to gender differentials. This fact has an obvious gap for the two groups of nations, and our forecasts show a continuing failure to "approach" the level of male and female. In these circumstances is clear the need of a greater integration of human capital in work activities, focusing on activities with a high level of "work productivity", useful for a sustainable development. If our results are confirmed by further studies, this would reveal an urgent need of rising females education level and their participation in the labour force. While our results allows us to glimpse that changing the composition of the access to education and labour force dynamics to include more females would have a positive effect on economic growth, a more realistic policy suggestion would be to develop an human capital empowerment and employment-intensive growth plans referring in particular to females. At the least, the findings suggest that existing barriers to female education and employment are not only disadvantageous to females, but also appear to reduce economic growth in developing countries.

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